

Problem 1.1 Finding and Using Rates

To determine your walking rate:

- Line up ten meter sticks, end to end (or mark off 100 meters), in the hall of your school.
 - Have a partner time your walk.
 - Start at one end and walk the length of the ten meter sticks using your normal walking pace.
- A. What is your walking rate in meters per second?
 - B. Assume you continue to walk at this constant rate.
 1. How long would it take you to walk 500 meters?
 2. How far could you walk in 30 seconds? In 10 minutes? In 1 hour?
 3. Describe in words the distance in meters you could walk in a given number of seconds.
 4. Write an equation that represents the distance d in meters that you could walk in t seconds if you maintain this pace.
 5. Use the equation to predict the distance you would walk in 45 seconds.



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1.2 Walking Rates and Linear Relationships

Think about the effect a walking rate has on the relationship between time walked and distance walked. This will provide some important clues about how to identify linear relationships from tables, graphs, and equations.

Problem 1.2 Linear Relationships in Tables, Graphs, and Equations

Here are the walking rates that Gilberto, Alana, and Leanne found in their experiment.

Name	Walking Rate
Alana	1 meter per second
Gilberto	2 meters per second
Leanne	2.5 meters per second

- A.**
1. Make a table showing the distance walked by each student for the first ten seconds. How does the walking rate affect the data?
 2. Graph the time and distance on the same coordinate axes. Use a different color for each student's data. How does the walking rate affect the graph?
 3. Write an equation that gives the relationship between the time t and the distance d walked for each student. How is the walking rate represented in the equations?
- B.** For each student:
1. If t increases by 1 second, by how much does the distance change? How is this change represented in a table? In a graph?
 2. If t increases by 5 seconds, by how much does the distance change? How is this change represented in a table? In a graph?
 3. What is the walking rate per minute? The walking rate per hour?
- C.** Four other friends who are part of the walkathon made the following representations of their data. Are any of these relationships linear relationships? Explain.

George's Walking Rate

Time (seconds)	Distance (meters)
0	0
1	2
2	9
3	11
4	20
5	25

Elizabeth's Walking Rate

Time (seconds)	Distance (meters)
0	0
2	3
4	6
6	9
8	12
10	15

Billie's Walking Rate

$$D = 2.25t$$

D represents distance
 t represents time

Bob's Walking Rate

$$t = \frac{100}{r}$$

t represents time
 r represents walking rate

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